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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/801,720

03/17/2004

Kenta Shiga

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1880

24956

7590

09/19/2006

MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.
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ALEXANDRIA, VA 22314

EXAMINER

WILLETT, STEPHAN F

ART UNIT

PAPER NUMBER

2142

DATE MAILED: 09/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/801,720

Applicant(s)

SHIGA ET AL.

Examiner

Stephan F. Willett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-10 and 12-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-10 and 12-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date
:6/27/06;1/27/05;10/06/04;3/17/04.

DETAILED ACTION

Claim Rejections - 35 USC 103

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103 and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claim 1, 3-4, 8-10, 12-13, 15 17-21 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Alonso et al., U.S. Patent App. Pub. 2003/0142628, in view of the Admitted Prior Art on pages 1-3 of the specification.

2. Regarding claim 1, 3, 10, 12, 19, 21, Alonso teaches the invention substantially as claimed by disclosing a system comprising: A first device (Fig. 4 elem. 105(b) mainframe); A second device (Fig. 4 elem. 120(a) disk array 1); A plurality of paths connected between the first device and the second device (Fig. 4 paths through elem. 405 switch fabric 1 and elem. 410 switch fabric 2); A third device or control unit (par. 44, elem. 200) which is connected to the

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first device (elem. 415 first adjunct processor); Wherein the first device transfers data to the second device using the plurality of paths at a predetermined ratio defining a weighting of an amount of communications to be allocated among the plurality of paths so that communication loads among the plurality of paths are balanced (pars. 44 and 67); Wherein the third device detects congestion of the plurality of paths and notifies the first device of the congestion (par. 58 IFSL services software on the adjunct processor analyzes switching fabric management data to detect congestion per par. 67); and Wherein the first device changes the predetermined ratio among the paths, thereby changing the weighting of an amount of communications to be allocated among the plurality of paths, based on notification from said third device regarding congestion on the plurality of paths to transfer the data to the second device using the plurality of paths (pars. 44 and 67 showing rebalancing). An acknowledgement packet has not been received (par. 66-“fails’). Alonso does not specifically teach a system in which the first device and the second device are both storage devices. Rather, Alonso teaches a system in which the first device is a mainframe and the second device is a storage device. The APA on the other hand teaches a system in which a host device communicates with a storage device (p. 2 last complete paragraph describing host-to-storage communication). However, the APA also teaches that load balancing is also used in a storage area network to control communications between storage devices (p. 2 last complete paragraph describing storage-to-storage communication). These storage devices are communicating to implement a remote copy. It would have been obvious to one of ordinary skill in the art to modify the system of Alonso to have the adjunct processor manage the communication between disk array 1 and 2 of Figure 2 when performing a remote copy operation, thereby teaching the invention as claimed. This modification would have been

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obvious because copying data to a geographically distant site as taught by the APA reduces the vulnerability of the data to loss through some local catastrophe such as a fire or earthquake.

3. Regarding claim 20, Alonso teaches the invention substantially as claimed by disclosing a system comprising: A first device (Fig. 4 elem. 105(b) mainframe); A second device (Fig. 4 elem. 120(a) disk array 1); A plurality of paths connected between the first device and the second device (Fig. 4 paths through elem. 405 switch fabric 1 and elem. 410 switch fabric 2); A computer which is connected to the first storage device (Fig. 4, elem. 200); A switch is included in the plurality of paths (elem. 415 first adjunct processor); Wherein the first device transfers data to the second device using the plurality of paths at a predetermined ratio defining a weighting of an amount of communications to be allocated among the plurality of paths so that communication loads among the plurality of paths are balanced (pars. 44 and 67); Wherein the third device detects congestion of a first path (par. 42-“failed port”) among the plurality of paths and notifies the first device of the congestion (par. 58 IFSL services software on the adjunct processor analyzes switching fabric management data to detect congestion per par. 67); and Wherein the first device changes the predetermined ratio among the paths, thereby changing the weighting of an amount of communications to be allocated among the plurality of paths, based on notification from said third device regarding congestion on the plurality of paths to transfer the data to the second device using the plurality of paths (pars. 44 and 67 showing rebalancing). Alonso detects and sends information on the recovery from the congestion (par. 44 - “performance management”, 47-“keeps track”). Alonso does not specifically teach a system in which the first device and the second device are both storage devices. Rather, Alonso teaches a system in which the first device is a mainframe and the second device is a storage device. The

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APA on the other hand teaches a system in which a host device communicates with a storage device (p. 2 last complete paragraph describing host-to-storage communication). However, the APA also teaches that load balancing is also used in a storage area network to control communications between storage devices (p. 2 last complete paragraph describing storage-to-storage communication). These storage devices are communicating to implement a remote copy. It would have been obvious to one of ordinary skill in the art to modify the system of Alonso to have the adjunct processor manage the communication between disk array 1 and 2 of Figure 2 when performing a remote copy operation, thereby teaching the invention as claimed. This modification would have been obvious because copying data to a geographically distant site as taught by the APA reduces the vulnerability of the data to loss through some local catastrophe such as a fire or earthquake.

1. Regarding claim 4, 13, Alonso describes a system wherein each of the plurality of paths has a network device connecting the first device and the second device, wherein the third device is connected to the network device via a network, and wherein the third device receives a notification of occurrence of congestion in the network device from the network device via the network (par. 44, elem. 200).

2. Regarding claim 15, Alonso describes a system wherein, in a case in which a response is not returned from the second device for a predetermined period, the first devices judges that congestion has occurred in the plurality of paths (par. 66-“fails”).

4. Regarding claim 8-9, 17-18, Alonso describes the third device has information on a change rate of the predetermined ratio, and in a case in which congestion is detected (par. 42-“failed port”, 46, 47, 67 (“real time monitoring”), computes the ratio among paths after change

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based on the change rate (par. 67), and then detects and sends information on the recovery from the congestion (par. 44 -“performance management”, 47-“keeps track”),

1. Claims 5-7, 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alonso et al., U.S. Patent App. Pub. 2003/0142628.
2. Regarding claim 5-7, 14, 16, the Alonso patent discloses the method of the preceding claims. The Alonso patent does not explicitly disclose all the details relating to specific types of congestion techniques such using an SNMP trap, analyzing discarded packets, an ECN flag, or redundant acknowledgements. However, Official Notice is taken MPEP 2144.03 (a) that details relating to specific types of congestion techniques are well known in the art to insure failures are detected. It would have been obvious to one of ordinary skill in the art at the time of the application's invention to provide details relating to specific types of congestion techniques to obtain the advantages of recognizing known failures. By the above rational, the claim is rejected.

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Conclusion

1. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephan Willett whose telephone number is (571)272-3890. The examiner can normally be reached Monday through Friday from 8:00 AM to 6:00 PM.
3. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell, can be reached on (571)272-3868. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.
4. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-2100.

sfw

September 14, 2006



ANDREW CALDWELL
SENIOR PATENT EXAMINER